

Factors Associated with Quality of Life Among Students During the Transition from Pandemic to Endemic Phase

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Abstract

Quality of life (QoL) is an individual's perception of their position in life. This is about the culture and value system of someone's lives, expectations, standards, and concerns with regards to physical capacity, psychological functioning, social relationships, and environment including students in tertiary education. This study aims to determine the significant predictor associated with the level of QoL among students in tertiary education. A cross-sectional design using a simple random sampling technique was carried out among students in one university in Western Malaysia. WHOQoL-Bref is the instrument used to gather the responses on QoL. Descriptive mean and standard deviation statistic, Binary Logistics Regression (BLR), and Chi-Square analysis were conducted to gain significant findings from the data. It was found that majority of the students are in poor state of QoL. This study confirmed that gender, age, and level of education are the significant predictors that associated to the students' QoL state ($p < 0.05$). This research shall be expanded to larger group and adding predictor variables that might contribute to QoL.

Keywords: Physical Capacity, Psychological, Social Relationship, Environment, QoL

Introduction

Quality of life (QoL) is an individual's perception of their position in life. This is about the culture and value system of someone's lives and about their goals, expectations, standards, and concerns with regards to physical capacity, psychological functioning, social relationships, and environment. In 2020, the contagious COVID-19 virus spread on a global scale has resulted in the implementation the Movement Control Order (MCO) by Malaysia government.

As announced, various activities such as public gatherings that involved physical meet and contacts are prohibited and there are no movements of people into or out of an area are allowed without permission including physical learning in university campuses. This requires major and drastic turns of the traditional pedagogy of teaching to online and distance base. The limit in the normal physical related activities have had impacted students life well-being and quality (Mourady et. al., 2017) especially male (Chu and Li, 2022).

In one study by Kaparounki et al. (2020) found about the prevalence of anxiety up to 42.5% among students, and 74.3% for depression, 63.3% for suicidal thoughts, and more importantly 43.0% of them have a decline in quality of life resulting from the suspension of face-to-face academic activities. It is the fact that the disruption on learning has impacted students mental health well-being (Kong, 2022) somehow impacted their QoL state. Psychologically, a good QoL means someone who has a good mental health well being.

Minhat and Alawad (2019) underlined that 31.1% of the students were found to be depressed, mainly within the moderately depressed category; 53.9% had anxiety; and 26% had stress. This study was done on 447 medical students from the Faculty of Medicine and Health Sciences, University Putra Malaysia. According to Cao et al. (2020), via their articles, 0.9% of the respondents were experiencing severe anxiety, 2.7% moderate anxiety, and 21.3% mild anxiety. Findings from Xiong et al. (2019) have shown that QoL is closely related to psychological health of individuals. On gender wise, the researchers found that males were more likely to have psychological disorder (OR = 1.31, 95% CI = 1.13–1.52) as compared to females. Furthermore, the authors also found that people affected by leprosy (PAL) living in communities had poor psychological health.

On social relationships component, there are three criteria described about it which are personal relationships, social support, and sexual activity. It is important for someone, in this context of study is students to well connect with others like parents and friends as those people offer us a sense of belonging, purpose, and support, as well as improved health and lifespan. Abdullah et al. (2021) stated that increasing social interactions and social networks with friends provide a significant higher QoL. In addition, in one study by Longest & Kang (2022) about college students who experienced a traumatic event, experienced less severe post-traumatic stress disorder (PTSD) symptoms after received more support from peers. Therefore, students must have the courage establish good social relationships for the good life well being.

Environment, the other pivotal component of HRQoL is the external factors and contexts that significantly shape individuals' overall well-being. Environment encompasses physical safety and security, home environment, financial resources, health, and social care aspect in one's life. Elements such as stress and sleep, as studied by Chang et al. (2020), underscore the significance of the interplay between environmental conditions and individual variables—particularly perceived stress and sleep—when evaluating their collective impact on Quality of Life (QoL). Adding to this, Gan and Yuen (2019) brought to the forefront that a stronger financial background aligns with a higher environmental score, thereby correlating with an enhanced Quality of Life (QoL).

Various demographic factors, including gender, educational level, and parents' income and age, have been extensively examined by researchers. For instance, Henning-Smith (2016) shed light on gender discrepancies in living arrangements, psychological distress, and variations in Quality of Life (QoL). Campos et al. (2014) emphasized that women with good physical and mental health tend to experience higher levels of QoL. In contrast, for men, the

highest QoL is associated with a combination of high socioeconomic status, robust physical and mental health, and favorable psycho-social conditions.

From an educational perspective, individuals with higher levels of education generally enjoy better health, reflected in their self-reported well-being and reduced rates of morbidity, mortality, and disability. Lysenko and Zharinova (2021) assert that education significantly shapes individuals. They highlight its pivotal role in today's challenging economic, cultural, and social contexts, influencing the present and future quality of life. This notion aligns with the findings of Ross and Wu (1995), who identified a direct link between higher educational attainment and improved health.

On age matter, older age people are more likely to experience poor QoL (World Health Organization, 2015) compared to younger individuals due to the difference in capabilities to carry out activities and tasks. Kirchengast and Haslinger (2008) Rahmadhani et al. (2022) had found that elderly individuals (more than 70 years old) with poor family functions also experience a poor quality of life, further strengthening the association between QoL and age. Given the context of students in Malaysia, it becomes imperative to inquire into the quality of life they experience in relation to the aforementioned factors. Consequently, this research aims to examine those factors, to uncover their impact on the present state of quality of life among university students. By undertaking this investigation, this study hope to gain a comprehensive understanding of the factors influencing the quality of life of students at the university level. IN specific, this study examine the effect of demographic factors (gender, educational level, parents' income, age) towards

In conclusion, studying the factors affecting QoL among university students is vital for understanding the challenges and opportunities they face during this transformative epidemic. By gaining insights into these aspects, universities can design programs related to physical activity, psychological functioning, social relationships, and the environment. Moreover, universities might provide initiatives that support students' personal growth, academic success, and overall well-being, fostering a positive and enriching university experience.

Methodology

This section describes the study design, data collection method, instrument, and method of analysis for this research.

Study Design

A cross-sectional study was chosen for the study. The primary reason for using this design was that the data was collected at a single point in time. Furthermore, this design allowed the researcher to better understand the relationship between variables.

Data Collection Method

A total of 386 undergraduate students were sampled from the selected public higher education institutions in Western Malaysia. The name of the chosen university was not revealed in this study due to confidentiality. The researchers disseminated a self-administered questionnaire to the selected sample, whose ages ranged from 18 to 25 years old.

A cover letter was included in the questionnaire to explain the purposes of the study and what participation entails. Students were asked to complete the questionnaire within 15–30 minutes. The data collection took place in the period between October and November 2022.

Instrument

The instrument used in this study is a questionnaire from which the questions were adopted from World Health Organization (1996). The instrument consists of six sections. The original questionnaire contained 26 items with an ordinal scale, including four domains: physical capacity, psychological, social relationships, and environment, but in this study, only 25 items will be used because item 21 from domain 3 was removed due to the question asking about sex life and causing discomfort. This questionnaire contains Sections A, B, C, D, E, and F. Section A consists of demographic questions about students using the nominal level of measurements such as gender, campus, level of education, and level of parents' income. Section B until Section F relates to QoL questions: physical capacity, psychological, social relationships, environment, and quality of life. Detail on the items from sections B to F of this instrument is elaborated in Table 1.

Table 1

Construct

Factor	No of Item	Scale
Physical Activity	7	Five points various response range
Psychological	6	
Environment	8	
Social Relationship	2	
Overall Quality of Life	2	

Ethical Consideration

Ethical approval was obtained from the Research Ethics Committee, Universiti Teknologi MARA. Participants were advised that completing the questionnaire is voluntary and their responses will be kept confidential and anonymous.

Data Analysis

A cross-sectional study was chosen for the study. The primary reason for using this design was that the data was collected at a single point in time. Furthermore, this design allowed the researcher to better understand the relationship between variables.

Descriptive Analysis

The first part of the data analysis used numerical measures that included mean and standard deviation. These analyses aided the author in developing preliminary ideas about the data.

Chi-Square Test of Independence

Chi-Square was used to determine whether there is an association between QoL and the predictor variables, including gender, level of education, level of income, and age. Turhan (2020) suggested that if the p-value is less than 0.05, it can be concluded that there is an association between the variables.

The assumptions for the Chi-Square Test of Independence were checked before further analyses were carried out. The assumptions included both the interest variables required as categorical variables. In addition, all the observations in the dataset are independent. In other words, the value of one observation in the dataset does not affect the value of any other observation. Besides that, the cells in the contingency table are mutually exclusive, which

means an individual cannot belong to more than one cell. Furthermore, the expected value of cells should be greater than 5 in at least 80% of cells.

Binary Logistics Regression Analysis (BLR)

Binary Logistics Regression (BLR) was used to achieve the main goal of this study. The following equation is given as follows:

$$\left(\frac{p}{1-p} \right) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon$$

(1)

where

Y is the quality of life (0 – Poor, 1 – Good)

X1 is gender (0 – Female, 1 – Male)

X2 is age

X3 is the level of education (0 – Bachelor, 1 – Diploma)

X4 is parents' income (0 – B40, 1 – M40, 2 – T20)

B0 is the intercept.

Bi is the coefficient for each independent variable.

ε is the error term.

The total scores on QoL were first transformed linearly to a 0-100 scale. The score represented the percentage of the total possible score achieved for each respondent. Then the total score after transformation is divided by four hundred and multiplied by one hundred percent to find out which individual has a good QoL. In permitting the BLR analysis, Silva et al. (2014) suggested 60 is the best cut-off point for evaluating perceived QoL. Hence, the response variable (QoL) in this analysis is presented as poor (0) and good (1).

Model evaluation on BLR starts with analyzing the model's performance via the Omnibus test. According to Al-Bairmani and Ismael (2021), if the p-value is less than 0.05, the null hypothesis is rejected, which indicates the model is significant. The evaluation continued with determining the goodness of fit of the model by using the Hosmer-Lemeshow test. Referring to the same journal, both authors indicate that if the p-value is less than 0.05, reject the null hypothesis, which indicates the model is not appropriate. The Cox and Snell R square was used to determine the contribution of the predictor variables to explaining the response variable. This value is believed to range between 0 and 1.

The classification table is a method to evaluate the predictive accuracy of logistic regression through sensitivity, specificity, positive predictive value, negative predictive value, and accuracy measures of the model. Finally, the Wald test is used to determine the statistical significance of each of the independent variables. Based on this coefficient test, it indicates that the predictor variables affect predicting the value of the dependent variable if the p-value is less than 0.05.

Result and Discussion

This section describes the analysis that has been used to achieve the objectives of the research.

i. Descriptive Analysis

A preliminary analysis of the distribution of the level of quality of life among the students is revealed in the following graphical presentation and numerical descriptive measures. Pie chart in figure 1 illustrates that more than 50% (58.3%) of the students had poor quality of life during the transition from the pandemic to the endemic phase.

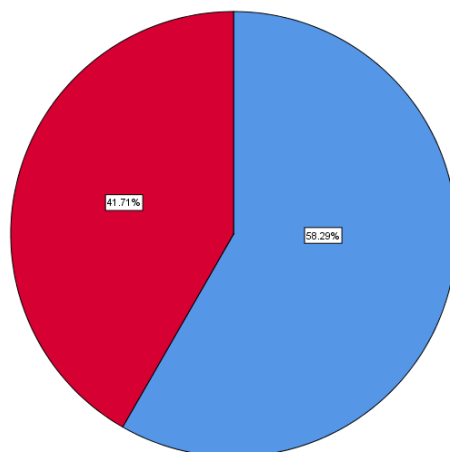


Figure 1: Distribution of the level of QoL

Table 2 reveals information on the age of the respondents. Most of the respondents are 18 years old. The youngest respondent is 18 years old, while the eldest is 25 years old. On average, the respondents involved in this study are 19 years old.

Table 2

Age of Students

Mean	Mode	Median	Minimum	Maximum
19.2720	18	18	18	25

Table 3 shows the mean and standard deviation of the characteristics of predictor variables towards QoL score. The mean QoL score for females was 55.2829, which was lower than the mean score for males, which was 57.4776. This explained that males have better QoL than females during the endemic phase. The mean QoL score of the level of education for the bachelor was 57.0526 higher compared to the diploma, which was 55.0818, indicating that the bachelor's respondents had a better QoL during the endemic phase. There were three levels of income, which were B40, M40, and T20, with mean scores of 55.6708, 55.6138, and 55.7450, respectively. During the endemic phase, group T20 had a slightly higher score as compared to B40 and M40.

Table 3

Mean and Standard Deviation of Demographic Profile

Variable	Mean	Standard Deviation
Gender		
Female	55.2829	10.1267
Male	57.4776	12.7764
Level of Education		
Bachelor	57.0526	9.5378
Diploma	55.0818	11.0450
Level of Income		
B40	55.6708	10.4692
M40	55.6138	10.6198
T20	55.7450	11.6850

ii. Chi-Square Test of Independence Analysis

Due to the normality assumption being violated, this analysis was performed to investigate the association between the variables. Based on Table 4, there is an association between QoL and gender, as the p-value was 0.003. Besides that, there is an association between QoL and level of education, with a p-value of 0.023. Unfortunately, there is no association between QoL and level of income, as the p-value of 0.250 was greater than 0.05.

Table 4

Association of Quality of Life (QoL) and Predictor Variables

Variable	p-value
QoL and Gender	0.003
QoL and Level of Education	0.023
QoL and Level of Income	0.250

iii. Binary Logistics Regression Analysis (BLR)

In aiming for the main goal of this study, BLR analysis was performed. Initial evaluation was done by performing the Omnibus Test to test the model's performance. It was found that the model was significant (0.003). Next, the Hosmer-Lemeshow Test was hired to determine the goodness of fit of the model. It is reported that the model is appropriate, which leads to a good fit for the data (0.743). Based on the Cox and Snell R-Square, 4.6% of the total variation in the quality of life is explained by the significant predictor variables.

Table 5

Goodness of Fit

Omnibus Test	0.003
Hosmer-Lemeshow	0.743
Cox and Snell R-Square	0.046

Furthermore, the classification table in Table 6 shows the comparison of the predicted and actual observed values of the intention to adopt QoL on the logistic regression function. The specificity of the model is that 83.6% of cases were correctly predicted to fall into the category of poor QoL by the model. The sensitivity for the model is 33.5% of cases correctly predicted to fall into the group of good QoL by the model. The model correctly predicted 62.7% of the cases in this study. The following table indicates the significant factors that contribute to quality of life.

Table 6

Classification

Observed	Predicted		% Correct	
	Quality of Life			
	Poor	Good		
Quality of Life	Poor	187	38	83.6
	Good	116	45	33.5
Overall %				62.7

Table 7 shows the variables that were found statistically significant to the level of QoL. The Wald test verified three variables were significant since the reported p-value were less than 0.05. The three variables are gender (0.015), age (0.038), and level of education (0.002). From the odds ratio, male students are 1.978 times more likely compared to female to have a good quality of life. On side of students' education, diploma students are 0.306 times less likely to have a good quality of life as compared to bachelor degree students. About age, for an additional of 1 year, the students the log likelihood of the QoL score of the student will changed at 9.786. In other words, older age student, regardless of gender and education level, he or she is less likely to have good quality of life as compared to younger age.

Table 7
Coefficient

	Odds ratio Exp (B)	Wald	Sig
Gender	1.978	5.966	0.015
Age	0.790	4.326	0.038
Level of Education	0.306	9.786	0.002
Constant	111.719	3.833	0.050

Hence, the final logistic regression model for level of QoL can be written as in equation (2).

$$p\left(\frac{p}{1-p}\right) = 111.719 + 1.978X_1 + 0.79X_2 + 0.306X_3 \quad (2)$$

where
 X_1 = Gender (Male)
 X_2 = Age
 X_3 = Level of Education

Conclusion

This study evaluates the quality of life of university students by identifying the most significant factors during the transition from pandemic to endemic phases. Through the evaluation of the QoL, the mean QoL is lower than 60, indicating poor QoL among the students. 58.3% of the students had a poor quality of life during this phase. This situation might arise among the students due to the process of adapting from online distance learning to physical learning on campus.

BLR analysis revealed the most significant factors contributing to QoL are gender, age, and level of education. This finding is attuned to the previous research done by Backes et al. (2008) and Ross and Wu (1995), respectively. On the contrary, it was found that there was no significant effect on QoL by the level of parents' income. The contradiction in this finding might exist due to a lack of balance data on the parent's income. A chi-squared analysis reported an association between QoL and gender and level of education, respectively. Many studies have proven that these two variables are related to QoL. By using multiple linear regression analyses, Kirchengast and Haslinger (2018) reported that gender has a significant impact on general QoL. The findings of this study align with Lasheras et al. (2001) statement that stated a lower educational level (LE) was associated with poor self-assessed health.

There are opportunities to enhance the outcome of the study. In future studies, it is strongly recommended to further expand the target population to produce better results and more detailed analysis. Besides, it is recommended to use a large amount of data since this can lead

to more accurate results and the best outcome. Based on the results of this study, the researcher highly recommends considering the other predictor variables to be included in the next research. Furthermore, future researchers should carefully choose the right demographic profile that aligns with the target population.

References

- Abdullah, M. F. I. L. B., Mansor, N. S., Mohamad, M. A., & Teoh, S. H. (2021). Quality of life and associated factors among university students during the covid-19 pandemic: a cross-sectional study. *BMJ open*, 11(10), e048446.
- Al_Bairmani, Z. A. A., & Ismael, A. A. (2021, March). Using Logistic Regression Model to Study the Most Important Factors Which Affects Diabetes for The Elderly in The City of Hilla/2019. In *Journal of Physics: Conference Series* (Vol. 1818, No. 1, p. 012016). IOP Publishing.
- Backes, G., Lasch, V., & Reimann, K. (2008). *Gender, health, and ageing: European perspectives on life course, health issues, and social challenges*. Springer.
- Campos, A. C. V., Vargas, A. M. D., Albala, C., et al. (2014). Aging, gender, and quality of life (ageqol) study: factors associated with good quality of life in older Brazilian community-dwelling adults. *Health and quality of life outcomes*, 12(1), 1–11
- Chang, K. K. P., Wong, F. K. Y., Chan, K. L., Wong, F., Ho, H. C., Wong, M. S., ... & Yang, L. (2020). The Impact of the Environment on the Quality of Life and the Mediating Effects of Sleep and Stress. *International Journal of Environmental Research and Public Health*, 17(22), 8529.
- Chu, Y. H., & Li, Y. C. (2022). The impact of online learning on physical and mental health in university students during the COVID-19 pandemic. *International Journal of Environmental Research and Public Health*, 19(5), 2966.
- Cao, W., Fang, Z., Hou, G., Han, M., Xu, X., Dong, J., & Zheng, J. (2020). The psychological impact of the COVID-19 epidemic on college students in China. *Psychiatry research*, 287, 112934.
- Gan, G.-G., & Yuen Ling, H. (2019). Anxiety, depression, and quality of life of medical students in Malaysia. *Med J Malaysia*, 74(1), 57–61.
- Henning-Smith, C. (2016). Quality of life and psychological distress among older adults: The role of living arrangements. *Journal of Applied Gerontology*, 35(1), 39–61.
- Kaparounaki, C. K., Patsali, M. E., Mousa, D. P. V., Papadopoulou, E. V., Papadopoulou, K. K., & Fountoulakis, K. N. (2020). University students' mental health amidst the COVID-19 quarantine in Greece. *Psychiatry Research*, 290, 113111.
- Kirchengast S, Haslinger B. Gender differences in health-related quality of life among healthy aged and old-aged Austrians: Cross-sectional analysis. *Gend Med* 2008;5:270-278.
- Kong, S. W., Cheong, S. P. Y., Yong, J. L., & Ong, E. L. C. (2022). Psychological well-being amongst students in a Malaysian medical college one year into the COVID-19 pandemic: a cross-sectional study. *Journal of Global Health Reports*, 6, e2022063.
- Lasheras, L., Aznar, S., Merino, B., & López, E. G. (2001). Factors associated with physical activity among Spanish youth through the National Health Survey. *Preventive medicine*, 32(6), 455-464.
- Longest, K., & Kang, J.-A. (2022). Social media, social support, and mental health of young adults during covid-19. *Frontiers in Communication*, 7, 828135.
- Lysenko, E. M., & Zharinova, Y. N. (2021). Quality of education as an indicator of the quality of life. In *SHS Web of Conferences* (Vol. 101, p. 03045). EDP Sciences.

- Minhat, H. S., & Alawad, T. A. (2019). Risks of mental problems among medical students in a public university in Malaysia. *History*, 11(436), 2-5.
- Mourady, D., Richa, S., Karam, R., Papazian, T., Hajj Moussa, F., El Osta, N., ... & Rabbaa Khabbaz, L. (2017). Associations between quality of life, physical activity, worry, depression, and insomnia: A cross-sectional designed study in healthy pregnant women. *PloS one*, 12(5), e0178181.
- Rahmadhani, W., & Chamroen, P. (2022). Family functions, social support and quality of life among elderly during pandemic COVID-19: A cross-sectional study. *International Journal of Health Sciences*, 6, 1540-50.
- Ross, C. E., & Wu, C. (1995). The Links Between Education and Health. *American Sociological Review*, 60(5), 719–745. <https://doi.org/10.2307/2096319>
- Silva, P. A. B., Soares, S. M., Santos, J. F. G., & Silva, L. B. (2014). Cut-off point for WHOQOL-bref as a measure of quality of life of older adults. *Revista de saude publica*, 48, 390-397.
- Turhan, N. S. (2020). Karl Pearson's Chi-Square Tests. *Educational Research and Reviews*, 16(9), 575-580.
- World Health Organization. (1996). WHOQOL-BREF: introduction, administration, scoring and generic version of the assessment: field trial version, December 1996 (No. WHOQOL-BREF). World Health Organization.
- Xiong, M., Wang, X., Su, T. et al. Relationship between psychological health and quality of life of people affected by leprosy in the community in Guangdong province, China: a cross-sectional study. *BMC Public Health* 19, 424 (2019). <https://doi.org/10.1186/s12889-019-6672-x>